

**WHY THEY CAN WATCH YOU: ASSESSING THE
CONSTITUTIONALITY OF WARRANTLESS
UNMANNED AERIAL SURVEILLANCE
BY LAW ENFORCEMENT**

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I. INTRODUCTION

“In the far distance a helicopter skimmed down between the roofs, hovered for an instant like a bluebottle, and darted away again with a curving flight. It was the Police Patrol, snooping into people’s windows.”¹ Seventy years after penning these words, George Orwell’s classic cautionary tale remains relevant. Today, the federal government and law enforcement agencies nationwide operate unmanned aircraft systems (“UASs”) for, among other things, aerial surveillance similar to that which Orwell described. To paraphrase Justice Alito, dramatic technological changes have created a time in which popular expectations of privacy are in flux and may ultimately produce significant changes in popular attitudes.² These new UAS technologies promise to increase security and convenience at the cost of privacy, but many people find trading privacy for security worthwhile.³ Other people, however, believe that warrantless law enforcement UAS surveillance violates their privacy and should be unconstitutional under the Fourth Amendment. The U.S. Supreme Court has not ruled on an aerial surveillance

1. George Orwell, *Nineteen Eighty-Four* 2 (Plume Printing 2003) (1949).

2. *United States v. Jones*, 132 S. Ct. 945, 962 (2012) (Alito, J., concurring).

3. *Id.*

case since 1986, let alone a UAS surveillance case. Instead, a patchwork of other Fourth Amendment precedent and Federal Aviation Administration (“FAA”) regulations leave the public and law enforcement guessing about the extent of Fourth Amendment privacy protections from warrantless UAS surveillance. Despite the lack of clear constitutional guidance, both public and law enforcement UAS use continues to grow.

This Note begins by providing background information on the character and capabilities of UASs, as well as describing their current implementation throughout the United States. Next, it describes the current Fourth Amendment privacy framework and current FAA regulations as they affect UAS surveillance to construct an analytical framework. Last, this Note concludes that although UAS surveillance will likely be found constitutional, three potential arguments challenging the constitutionality of UAS surveillance may persuade the Supreme Court otherwise: (1) establishing the victim was in a constitutionally protected zone, (2) attacking the lawfulness of the vantage point from which the UAS surveilled, and (3) attacking the specific UAS technology used.

II. USE OF UNMANNED AIRCRAFT SYSTEMS IN AERIAL SURVEILLANCE

Commonly referred to as a “drone” or “unmanned aerial vehicle,” the Federal Aviation Administration (“FAA”) defines an “unmanned aircraft” simply as “a device used or intended to be used for flight in the air that has no onboard pilot.”⁴ This basic definition includes all classes of aircraft controllable in three axes, such as airplanes, helicopters, airships, and translational lift aircraft.⁵ This simple description belies the immense diversity of shape and function of unmanned aircraft: “us[ing] aerodynamic forces to provide vehicle lift, [an unmanned aircraft] can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or nonlethal payload.”⁶ A more expansive moniker, unmanned aircraft system (“UAS”), more accurately reflects the necessity of various accoutrements to operate an unmanned aircraft: “[t]he term [UAS] means an unmanned

4. FEDERAL AVIATION ADMINISTRATION (FAA), INTERIM OPERATIONAL APPROVAL GUIDANCE 08-01, UNMANNED AIRCRAFT SYSTEMS OPERATIONS IN U.S. NATIONAL AIRSPACE SYSTEM 4 (Mar. 13, 2008).

5. *Id.*

6. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-06-610T, UNMANNED AIRCRAFT SYSTEMS: IMPROVED PLANNING AND ACQUISITION STRATEGIES CAN HELP ADDRESS OPERATIONAL CHALLENGES 5 (2006).

aircraft and associated elements (including communication links and the components that control the unmanned aircraft) that are required for the pilot in command to operate safely and efficiently in the national airspace system.”⁷ The configurability of UASs allows for a stunning diversity of potential public and private uses, including law enforcement, surveillance, monitoring forest fires, weather research, scientific data collection, farm fence inspection, construction-site photography, and fishery protection.⁸

Like conventional aircraft, UASs can operate at all levels of airspace, generally based on their size. A UAS can broadly be categorized as “large” or “small.” “Small” UASs “typically weigh less than 55 pounds, fly below 400 feet above ground level, can stay airborne for several hours, and can be used for reconnaissance, inspection, and surveillance.”⁹ “Large” UASs, such as the now infamous Predator and Reaper systems, fly higher, for a longer duration, and cost significantly more than small UAS.¹⁰ Consequently, small UASs are “expected to comprise the majority of the UAS[s] that will operate in the national airspace” and “offer a simple and cost effective solution” for law enforcement purposes.¹¹ Currently, law enforcement agencies and other interested purchasers can “choose from about 146 different types of small UAS[s] being manufactured by about 69 different companies in the U.S.”¹² Additionally, some of the smallest camera-equipped UASs are marketed as toys.¹³ Given the extremely low cost when compared to other small UASs, it is conceivable that law enforcement agencies could repurpose these “toys” as aerial surveillance tools alongside other, more capable UASs. With such myriad UASs featuring drastically different prices and capabilities, it is perhaps not surprising that both law enforcement and private parties expect to use UAS surveillance in a variety of operations.

7. FAA Modernization and Reform Act (FAAMA) of 2012, Pub. L. No. 112-95 §331(9), 126 Stat. 72 [hereinafter FAAMA].

8. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-981, UNMANNED AIRCRAFT SYSTEMS, MEASURING PROGRESS AND ADDRESSING POTENTIAL PRIVACY CONCERNS WOULD FACILITATE INTEGRATION INTO THE NATIONAL AIRSPACE SYSTEM 10 (2012) [hereinafter GAO 2012 UAS REPORT].

9. *Id.* at 5.

10. *Id.*

11. *Id.* at 5 n.8.

12. *Id.* at 11.

13. For example, the Parrot AR.Drone2.0 weighs less than two pounds, comes equipped with a high-definition video camera, and can fly for twelve minutes up to 165 feet from the controller. *AR.Drone2.0*, PARROT.COM, <http://ardrone2.parrot.com/ardrone-2/altitude> (last visited Dec. 15, 2012) (offering the Parrot AR.Drone2.0 for purchase on Dec. 15, 2012 for \$269.99 on Amazon.com).

A. LAW ENFORCEMENT USE OF UAS SURVEILLANCE

Privacy activists are not idly speculating when they worry about law enforcement use of warrantless UAS surveillance—it is already occurring. Currently, several law enforcement agencies operate UASs within the United States, primarily focusing on developing and testing surveillance technologies.¹⁴ Customs and Border Protection (“CBP”), for example, owns nine UASs that it operates “to provide reconnaissance, surveillance, targeting, and acquisition capabilities” for its border security missions.¹⁵ Similarly, without providing operational details, the FBI has admitted that, since late 2006, it has occasionally used UASs for domestic surveillance missions without a warrant.¹⁶

Non-federal law enforcement agencies across the country also operate a variety of UASs with various cameras for law enforcement surveillance purposes: the Seattle police department’s Draganflyer X6 carries still, video, thermal, and low-light cameras;¹⁷ the North Little Rock police department’s Rotomotion SR30 carries day zoom or infrared cameras;¹⁸ the Miami-Dade police department’s Honeywell RQ-16A Micro Air Vehicle carries electro-optical or infrared cameras;¹⁹ and the Texas Department of Public Safety’s Wasp Air Vehicle carries two electro-optical and a thermal nighttime

14. See Jennifer Lynch, *These Drones Are Made For Watchin’*, ELECTRONIC FRONTIER FOUNDATION (EFF) (Aug. 16, 2012), <https://www.eff.org/deeplinks/2012/08/these-drones-are-made-watchin> (discussing documents released to the EFF by the FAA pursuant to FOIA requests).

15. GAO 2012 UAS REPORT, *supra* note 8, at 8–9 n.10.

16. Ryan Gallagher, *FBI Fesses Up: We’ve Used Domestic Drones 10 Times*, Slate (July 26, 2013), http://www.slate.com/blogs/future_tense/2013/07/26/fbi_admits_in_letter_to_rand_paul_that_it_s_used_domestic_drones_10_times.html.

17. *Draganflyer X6 Description/Technical Specifications*, EFF, <https://www.eff.org/document/seattle-pd-2010aircraft-system> (last visited Dec. 15, 2012). On February 7, 2013, however, Seattle’s mayor “ordered the police department to abandon its plan to use drones after residents and privacy advocates protested.” *Seattle Mayor Ends Police Drone Efforts*, USA TODAY (Feb. 7, 2013), <http://www.usatoday.com/story/news/nation/2013/02/07/seattle-police-drone-efforts/1900785>. The Seattle Police Department has agreed to return the UAS to the manufacturer. *Id.*

18. The Rotomotion SR30 weighs twenty-five pounds and can fly for seventy-five minutes. *North-Little-Rock-PD-2011_Aircraft_System*, EFF, <https://www.eff.org/document/north-little-rock-pd-2011aircraftsystem> (last visited Dec. 15, 2012).

19. The Honeywell RQ-16A weighs 16.3 pounds and can fly for forty minutes up to 10,000 feet. *MiamiDade-PD-2011-E5A56 Aircraft System*, EFF, <https://www.eff.org/document/miamidade-pd-2011-esa56-aircraft-system> (last visited Dec. 15, 2012); *T-Hawk*, HONEYWELL (June 2010), http://aerospace.honeywell.com/~media/UWSAero/commom/documents/myaerospacecatalog-documents/Defense_Brochures-documents/T-Hawk_Unmanned_Micro_Air_Vehicle.pdf.

camera.²⁰ Seeing potential demand, UAS manufacturers continue to develop and market new models, such as AeroVironment's Qube, designed specifically for law enforcement surveillance.²¹

As public concern over the privacy implications of law enforcement UAS operations increases, other departments pursuing UASs, such as the Alameda County, California, Sheriff's Office, publicly downplay surveillance missions in favor of other UAS applications: "[the Sheriff's Office] object[s] to the term surveil. We have no intention of doing that."²² Instead, "[UAS surveillance] will provide real-time situational analysis for first responders to include search and rescue missions, tactical operations, disaster response, recovery and damage assessment, explosive ordnance response, wildland and structure fire response and response to Hazmat incidents."²³ Despite rising public concern²⁴ and the FAA regulatory hurdles,²⁵ the relative simplicity of use and low cost of operation allows UASs to provide an attractive option for airborne law enforcement activities.²⁶ For the price of a patrol car (approximately \$30,000 to \$50,000, far less than the cost of a manned aircraft), an agency can augment its airborne capabilities, especially surveillance.²⁷ It is no wonder, then, that industry forecasts predict state and local law enforcement agency orders will represent the greatest proportion of near-term growth in the small UAS market.²⁸

20. *Texas-Dept-Public-Safety-2008 Communications*, EFF, <https://www.eff.org/document/texas-dept-public-safety-2008-communications> (last visited Dec. 15, 2012).

21. Isolde Raftery, *Anticipating Domestic Boom, Colleges Rev up Drone Piloting Programs*, NBCNEWS.COM (Jan. 29, 2013), http://openchannel.nbcnews.com/_news/2013/01/29/16726198-anticipating-domestic-boom-colleges-rev-up-drone-piloting-programs. AeroVironment describes the Qube as "public safety small UAS" that has been designed to be "transported in the trunk of a police vehicle . . . or carried in a backpack" and to "provide immediate situational awareness to first responders, giving them a birds-eye view of the situation, day or night, to save lives and protect property." *Qube: Public Safety Small UAS*, AeroVironment, http://www.avinc.com/uas/small_uas/qube/ (last visited Feb. 28, 2013).

22. David Kravets, *California County Inching Toward Drone Deployment?*, WIRED MAG. (Feb. 14, 2013), <http://www.wired.com/threatlevel/2013/02/alameda-drone-deployment>.

23. David Kravets, *California Eyeing Drone Surveillance*, WIRED MAG. (Dec. 4, 2012), <http://www.wired.com/2012/12/california-drones>.

24. *See infra* Section III.F (discussing other UAS legislation).

25. *See infra* Section III.E (discussing FAA Regulations).

26. GAO 2012 UAS REPORT, *supra* note 8, at 11.

27. *Id.*

28. *See id.*

B. NON-LAW ENFORCEMENT USE OF UASs

It is difficult to measure the extent of current private use of UASs, in part because the FAA permit statistics have aggregated all non-military users.²⁹ In the first half of 2012, law enforcement, academic institutions, and other government-related entities received a total of 342 permits to operate UASs (generally allowing operations for twelve to twenty-four months).³⁰ During the same time period, private sector entities, specifically UAS manufacturers, received just eight “experimental” permits granting UAS operations for research and development purposes only.³¹

In addition, many private users of UASs are simply not required to apply for FAA permits, which prevents an exact measurement of private UAS use.³² More precisely, the FAA “may not promulgate any rule or regulation regarding a model aircraft . . . [if] the aircraft is flown strictly for hobby or recreational use.”³³ A model aircraft can weigh up to fifty-five pounds and has no specific limitations on its flight characteristics.³⁴ Therefore, a private actor, acting solely as a hobbyist, may operate a small UAS that is essentially the same aircraft that law enforcement agencies must operate with a permit.³⁵ Although it is unclear exactly what “hobby or recreational” use entails,³⁶ private commercial users likely must obtain the proper permits before operating a UAS.³⁷ In fact, the FAA has previously noted that the aerial photography industry and others conducting remote sensing activities had “mistakenly interpreted FAA advisory circular 91-57, *Model Aircraft Operating Standards*, for permission to operate small UAS for research or compensation or hire purposes.”³⁸ Given the varied and growing range of potential

29. *Id.* at 6–7.

30. *Id.*

31. *Id.* at 7.

32. FAAMA, *supra* note 7, § 336.

33. *Id.*

34. *Id.*

35. GAO 2012 UAS REPORT, *supra* note 8, at 31.

36. There is confusion within the UAS industry and FAA about the applicability of the hobbyist guidelines. For example, “[a] farmer can be a modeler if they operate their aircraft as a hobby or for recreational purposes,” but a UAS manufacturer’s employee cannot “fly as a hobbyist [his] own [UAS] over property that [he] own[s].” Spencer Ackerman, *Domestic-Drone Industry Prepares for Big Battle with Regulators*, WIRED MAG. (Feb. 13, 2013), <http://www.wired.com/2013/02/drone-regulation>.

37. FAAMA, *supra* note 7, § 336.

38. FAA, ORDER 1110.150, SMALL UNMANNED AIRCRAFT SYSTEM AVIATION RULEMAKING COMMITTEE 1 (Apr. 10, 2008), *available at* <http://www.faa.gov/documentLibrary/media/Order/1110.150.pdf>.

commercial uses³⁹ and the wide availability of extremely low cost but capable “toy” UASs,⁴⁰ it is certainly possible that significant private commercial and other non-“hobby or recreational” UAS activity occurs without proper FAA permits.

In the future, the UAS industry expects the private UAS sector to boom.⁴¹ Indeed, Jim Williams of the FAA has predicted that “the potential market for government and commercial drones could generate ‘nearly \$90 billion in economic activity’ over the next decade.”⁴² Because the military is not expected to significantly expand its UAS fleet and sales to law enforcement are limited by the fact that there are only 18,000 agencies in the United States, much of this expansion in the UAS market is forecast to stem from the private farming sector.⁴³ Indeed, twenty-one public universities, each focused on agriculture, have already received FAA clearance to operate UASs.⁴⁴ Anticipating that “10,000 commercial drones will be operating” within the United States by 2020, three colleges have already begun offering degrees in piloting UASs.⁴⁵ Additionally, “many others—including community colleges—offer training for remote pilots.”⁴⁶ These programs focus on teaching non-military applications suitable both for law enforcement, such as tracking fleeing criminal suspects, and for private parties, such as “[m]onitoring livestock and oil pipelines, spotting animal poachers, . . . and delivering packages for UPS and FedEx.”⁴⁷ If these expectations come to even partial fruition, then the U.S. public can expect non-law enforcement UAS use to become a fact of life. Even now, with dozens of federal, state, and local law enforcement agencies using and pursuing UASs, a constitutional framework to understand the privacy implications of UAS surveillance is clearly necessary.

39. The GAO lists numerous examples of commercial use: pipeline, utility, and farm fence inspections; vehicular traffic monitoring; real-estate and construction-site photography; telecommunication signal relay; fishery protection and monitoring; and crop dusting. GAO 2012 UAS REPORT, *supra* note 8, at 10.

40. *See, e.g.*, PARROT.COM, *supra* note 13.

41. Ackerman, *supra* note 36.

42. *Id.*

43. Spencer Ackerman, *Drone Boosters Say Farmers, Not Cops, Are the Biggest U.S. Robot Market*, WIRED MAG. (Feb. 5, 2013), <http://www.wired.com/2013/02/drone-farm>.

44. *Id.*

45. Raftery, *supra* note 21.

46. *Id.*

47. *Id.*

III. DEVELOPING A FOURTH AMENDMENT PRIVACY FRAMEWORK FOR UAS SURVEILLANCE

The word “privacy” is not found within the U.S. Constitution, but for the past hundred years, the U.S. Supreme Court has been using the Fourth Amendment to protect a nebulous conception of privacy from technological advances that threaten to undermine it. The Fourth Amendment proclaims in part that “the right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated.”⁴⁸ As technology has evolved, so too has the Supreme Court’s jurisprudence on what law enforcement applications of these new technologies constitute an “unreasonable search and seizure.” In this way, the Supreme Court has used the Fourth Amendment to determine “what limits there are upon . . . technology to shrink the realm of guaranteed privacy.”⁴⁹

Because the Fourth Amendment protects against “unreasonable” searches (in contrast to “reasonable” searches), jurisprudence focuses on two questions: first, whether a Fourth Amendment search occurred, and second, whether the search was unreasonable. If a court concludes that no search occurred, then the action cannot have violated the Fourth Amendment.⁵⁰ The two questions are important to distinguish because, “with few exceptions, the question of whether a warrantless search of a home is reasonable and hence constitutional must be answered no.”⁵¹ Consequently, whether or not a Fourth Amendment search occurred will often be the dispositive question in determining whether or not the Fourth Amendment protects a person’s privacy from a technological advancement in law enforcement surveillance.

A. EARLY JURISPRUDENCE: THE PHYSICAL TRESPASS DOCTRINE— *OLMSTEAD V. UNITED STATES*

Early Supreme Court jurisprudence on visual surveillance linked common-law trespass to the question of whether or not a search occurred. In this way, the common law was clear: visual surveillance of a person or home was lawful because “the eye cannot by the laws of England be guilty of a

48. U.S. CONST. amend. IV.

49. *Kyllo v. United States*, 533 U.S. 27, 34 (2001).

50. *See id.* at 31 (noting that whether or not a “Fourth Amendment ‘search’” has occurred is “the antecedent question”).

51. *Id.* (citing *Illinois v. Rodriguez*, 497 U.S. 177, 181 (1990); *Payton v. New York*, 445 U.S. 573, 586 (1980)).

trespass.”⁵² In 1928, however, this static trespass doctrine was challenged by a technological advance in law enforcement surveillance—telephone wiretapping.

In *Olmstead v. United States*, the Supreme Court evaluated whether or not telephone wiretapping constituted an unreasonable search.⁵³ While investigating Olmstead’s suspected Prohibition-era bootleg activities, federal prohibition officers tapped his telephone by inserting “small wires along the ordinary telephone wires from the residence [of the defendant] and those leading from the chief office.”⁵⁴ The federal prohibition officers did not trespass upon any property of the defendant because the taps were inserted into telephone wires located in the basement of the large office building and along streets near the house.⁵⁵

In order to adapt existing Fourth Amendment jurisprudence to the novel technology of telephone wiretapping, the *Olmstead* litigants offered competing analogies.⁵⁶ The Government argued that the Court should analogize wiretapping to “traditional visual surveillance from a lawful vantage point.”⁵⁷ Olmstead, however, argued that the government’s actions were more like opening postal mail, which violates Fourth Amendment protections.⁵⁸ By a 5–4 majority, the Court endorsed the government’s analogy to visual surveillance and concluded that Olmstead had not been searched.⁵⁹

Writing for the one-justice majority, Chief Justice Taft explained two rationales. First, unlike “material things—the person, the house, his papers, or his effects,” Olmstead’s conversations were immaterial.⁶⁰ Therefore, not even a liberal interpretation of the Fourth Amendment in the “interest of liberty” could “justify enlargement of the language employed . . . to apply the

52. *Boyd v. United States*, 116 U.S. 616, 628 (1886) (quoting *Entick v. Carrington*, 95 Eng. Rep. 807 (Gr. Brit. 1765)).

53. *Olmstead v. United States*, 277 U.S. 438 (1928).

54. *Id.* at 456–57.

55. *Id.*

56. Luke M. Milligan, *The Real Rules of “Search” Interpretations*, 21 WM. & MARY BILL RTS. J. 1, 9 (2012).

57. *Id.* at 9 (citing *Olmstead*, 277 U.S. at 447–52 (citing *Hester v. United States*, 265 U.S. 57 (1924)) (holding that visual surveillance from open fields does not violate the Fourth Amendment)).

58. *Id.* (citing *Olmstead*, 277 U.S. at 464 (“It is urged that the language of Mr. Justice Field in *Ex Parte Jackson* . . . offers an analogy.”); *Ex parte Jackson*, 96 U.S. 727 (1878) (holding that the Fourth Amendment is applicable to sealed letters)).

59. *Olmstead*, 277 U.S. at 466.

60. *Olmstead*, 277 U.S. at 464.

words search and seizure as to forbid hearing or sight.”⁶¹ Chief Justice Taft’s second rationale, however, relied on prior trespass case law: “[no precedential cases] hold the Fourth Amendment to have been violated as against a defendant, unless there has been . . . an actual physical invasion of his house ‘or curtilage’ for the purpose of making a seizure.”⁶² Thus, by concluding that “[t]he intervening [telephone] wires [were] not part of [the defendant’s] house or office, any more than are the highways along which they stretched,”⁶³ the federal prohibition agent’s wiretapping activities could not be a Fourth Amendment search. Like visual surveillance from a lawful vantage point, the wiretaps were not a physical intrusion into a constitutionally protected area (such as a house, office, or curtilage).

In a separate dissent that has been characterized as “one of the most famous dissents in Supreme Court history,”⁶⁴ Justice Brandeis characterized wiretapping as a “[s]ubtler and more far-reaching means of invading privacy” and prophetically warned that “[t]he progress of science in furnishing the government with means of espionage is not likely to stop with wire tapping.”⁶⁵ Arguing that the “makers of our Constitution” conferred upon the people, as against the government, “the right to be let alone,” Brandeis concluded that every “unjustifiable intrusion by the government upon the privacy of the individual, whatever the means employed, must be deemed a violation of the Fourth Amendment.”⁶⁶

Like Justice Brandeis in his dissent, the public did not react favorably to *Olmstead*’s holding that law enforcement could wiretap telephone conversations without a warrant. Consequently, in 1934, Congress made wiretapping a federal crime (thereby rendering warrantless wiretapping illegal and the fruits of it inadmissible) by enacting § 605 of the Federal Communications Act.⁶⁷ Despite this, *Olmstead*’s analogy to a physical trespass continued to control, largely unchanged, for nearly forty years. For example, in *Lee v. United States*, the Court analogized an audio technological advance (a small radio transmitter worn by a conversant to transmit the conversation to remote law enforcement agents) to tools for improved visual surveillance (presumably from a lawful vantage point):

61. *Id.* at 465.

62. *Id.* at 466.

63. *Id.* at 465.

64. DANIEL J. SOLOVE & PAUL M. SCHWARTZ, INFORMATION PRIVACY LAW 260 (4th ed. 2011).

65. *Olmstead*, 277 U.S. at 473–74 (Brandeis, J., dissenting).

66. *Id.* at 478.

67. SOLOVE & SCHWARTZ, *supra* note 64, at 260–61.

[Defendant] was talking confidentially and indiscreetly with one he trusted, and he was overheard. This was due to aid from a transmitter and receiver, to be sure, but with the same effect on his privacy as if [the law enforcement agent] had been eavesdropping outside an open window. The use of bifocals, field glasses or the telescope to magnify the object of a witness' vision is not a forbidden search or seizure⁶⁸

In 1961, the *Olmstead* physical trespass analogy was tweaked by the holding in *Silverman v. United States* that an actual trespass (as defined by local law) was not necessary as long as there was “an actual intrusion into a constitutionally protected area.”⁶⁹ In *Silverman*, government agents eavesdropped on private conversations within the defendant’s house by attaching a “spike mike” listening device to a heating duct running into the defendant’s house. This action differed from the wiretapping in *Olmstead* because, in effect, the agent’s actions turned the entire heating duct of the house into a microphone. Calling this action an “usurp[ation of] part of the [defendant’s] house or office,” the Court concluded that the eavesdropping constituted an “unauthorized physical encroachment” (in essence, a constructive trespass).⁷⁰ While adjusting the *Olmstead* rule, the *Silverman* Court included strong language reminding government agents of the importance of the Fourth Amendment: “[a]t the very core [of the Fourth Amendment] stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion.”⁷¹ Although *Silverman* refrained from using “privacy” to expand the Fourth Amendment’s protections beyond concepts of trespass, its sentiment nonetheless hinted at the future direction of Fourth Amendment privacy jurisprudence.

B. THE “REASONABLE EXPECTATION OF PRIVACY”—*KATZ V. UNITED STATES*

In 1967, the Supreme Court drastically changed gears by rejecting *Olmstead*’s physical trespass analogy and accepting the idea of defining a Fourth Amendment search based on the victim’s intentions or expectations.⁷² In *Katz v. United States*, the Court evaluated whether or not placing an “electronic listening and recording device” on the outside of a public

68. *Lee v. United States*, 343 U.S. 747, 753–54 (1952).

69. *Silverman v. United States*, 365 U.S. 505, 512 (1961).

70. *Id.* at 510–12.

71. *Id.* at 511 (citing *Boyd v. United States*, 116 U.S. 616, 626 (1886); *Entick v. Carrington*, 95 Eng. Rep. 807 (Gr. Brit. 1765)).

72. *See Katz v. United States*, 389 U.S. 347, 353 (1967).

telephone booth for the purposes of overhearing a conversation within the closed public telephone booth constituted an unreasonable search.⁷³ Framing the issue in terms of a physical trespass on a constitutionally protected area, the lower courts upheld the government's actions based on *Olmstead* and its progeny.⁷⁴ Consequently, the Court granted certiorari "in order to consider the constitutional questions" of whether a public telephone booth is a "constitutionally protected area" and whether a "physical penetration of a constitutionally protected area" is necessary to be a search and seizure violative of the Fourth Amendment.⁷⁵ The Court, however, rejected "this formulation of the issues" and broke with *Olmstead* by stating that the "correct solution to Fourth Amendment problems is not necessarily promoted by the incantation of the phrase 'constitutionally protected area.'" ⁷⁶ To be explicitly clear in its rejection of *Olmstead*, the Court found that the resolution of Fourth Amendment issues "cannot turn upon the presence or absence of a physical intrusion into any given enclosure" and that the "'trespass' doctrine . . . can no longer be regarded as controlling."⁷⁷

Justice Stewart, writing the majority opinion, offered a new kind of Fourth Amendment search analysis in place of *Olmstead*:

[T]he Fourth Amendment protects people, not places. What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection. But what he seeks to preserve as private, even in an area accessible to the public, may be constitutionally protected.⁷⁸

Under this formulation of the Fourth Amendment, the Court must look to the subjective intent of the defendant inside the phone booth, rather than to the physical characteristics of the phone booth. Here, Katz manifested intent to preserve his privacy by entering the telephone booth, closing the door, and paying the fee. Thus, Katz was "surely entitled to assume that the words he utter[ed] into the mouthpiece [would] not be broadcast to the world. To read the Constitution more narrowly is to ignore the vital role that the public telephone has come to play in private communication."⁷⁹

73. *Id.* at 348.

74. *Id.* at 349–50; *see* *Goldman v. United States*, 316 U.S. 129, 134–35 (1942) (finding the warrantless use of a "detectaphone" placed on the outside of a wall to overhear conversations originating within the adjacent, enclosed office constitutional).

75. *Katz*, 389 U.S. at 350.

76. *Id.*

77. *Id.* at 353.

78. *Id.* at 351 (citations omitted).

79. *Id.* at 352.

By allowing the evolving role and use of technology in society—here the telephone—to impact its decision, the *Katz* majority attempted “to incorporate an objective and evolving privacy standard into [Fourth Amendment search] decisionmaking.”⁸⁰ The majority opinion, however, lacked clear standards to guide future courts.⁸¹ Justice Harlan, in his concurrence, supplemented the majority’s “people-not-places” discussion with a two-pronged “reasonable expectation of privacy” test: first, whether the person “exhibited an actual (subjective) expectation of privacy,” and second, whether that “expectation [is] one that society is prepared to recognize as ‘reasonable.’”⁸² Thus, to be a Fourth Amendment search (and therefore require a warrant), the government action must impinge on both a person’s subjective expectation of privacy and society’s objectively reasonable expectation of privacy. Justice Harlan’s two-part test would come to be known as the *Katz* test⁸³ and remains the rule today.⁸⁴ Furthermore, supplementing his own two-prong test, Justice Harlan expressed that: “a man’s home is, for most purposes, a place where he expects privacy, but objects, activities, or statements that he exposes to the ‘plain view’ of outsiders are not ‘protected’ because no intention to keep them to himself has been exhibited.”⁸⁵ Although left undefined in his concurrence, Justice Harlan’s “plain view” analysis would become critical to understanding a person’s “reasonable expectation of privacy” in the aerial surveillance cases that would later arise.⁸⁶

C. THE AERIAL SURVEILLANCE CASES

During the 1980s, the Supreme Court granted certiorari for three cases—*Ciraolo*,⁸⁷ *Dow*,⁸⁸ and *Riley*⁸⁹—presenting questions about the constitutionality of warrantless government aerial surveillance for domestic enforcement

80. Milligan, *supra* note 56, at 15.

81. *Id.* at 17.

82. *Katz*, 389 U.S. at 361 (Harlan, J., concurring).

83. *See, e.g.*, *Minnesota v. Carter*, 525 U.S. 83, 97 (1998) (Scalia, J., concurring) (commenting on “the *Katz* test (which has come to mean the test enunciated by Justice Harlan’s separate concurrence in *Katz*)”).

84. *But see, e.g.*, *United States v. Jones*, 132 S. Ct. 945, 952 (2012) (“the *Katz* reasonable-expectation-of-privacy test has been *added to*, not *substituted for*, the common-law trespassory test.”).

85. *Katz*, 389 U.S. at 361 (Harlan, J., concurring).

86. Travis Dunlap, *We’ve Got Our Eyes on You: When Surveillance by Unmanned Aircraft Systems Constitutes a Fourth Amendment Search*, 51 S. TEX. L. REV. 173, 185–86 (2009).

87. *California v. Ciraolo*, 476 U.S. 207, 209 (1986).

88. *Dow Chem. Co. v. United States*, 476 U.S. 227, 229 (1986).

89. *Florida v. Riley*, 488 U.S. 445, 449–51 (1989).

purposes. In each case, the Court applied the two-pronged *Katz* test and determined that no “subjective expectation of privacy that society was willing to accept as reasonable” existed.⁹⁰ Consequently, the Court held that no Fourth Amendment search had taken place and the warrantless aerial surveillance at issue was constitutional.

1. *Publicly Navigable Airspace as a Lawful Vantage Point*—*California v. Ciraolo*

In the 1986 case of *California v. Ciraolo*, the Supreme Court evaluated whether aerial surveillance conducted with the naked eye was a Fourth Amendment search requiring a warrant.⁹¹ Acting on an anonymous tip that Ciraolo was growing marijuana in his backyard, California police officers began an investigation.⁹² The officers’ attempts to peer into Ciraolo’s backyard (part of the curtilage of his home) from ground level were stymied by two fences (a six-foot outer fence and a ten-foot inner fence) that completely enclosed Ciraolo’s yard.⁹³ Undeterred, the officers “secured a private airplane and flew over [Ciraolo’s] house at an altitude of 1,000 feet, within navigable airspace.”⁹⁴ From that height, the officers observed marijuana plants growing within Ciraolo’s curtilage and “photographed the area with a standard 35mm camera.”⁹⁵

Applying *Katz*’s two-prong “reasonable expectation of privacy” test, the Court determined that Ciraolo satisfied the first prong when he manifested a subjective expectation of privacy by erecting the two fences.⁹⁶ The 5–4 majority, instead, focused on the second prong: “whether the government’s intrusion infringes upon the personal and societal values protected by the Fourth Amendment.”⁹⁷ As part of this analysis, Chief Justice Burger, writing the majority opinion, initially noted that the fact that an “area is within the curtilage does not itself bar all police observation” and that the Fourth Amendment does not “require law enforcement officers to shield their eyes when passing a home on public thoroughfares.”⁹⁸ Further, Burger explained that an individual’s ineffective measures to “restrict some views of his

90. Paul McBride, *Beyond Orwell: The Application of Unmanned Aircraft Systems in Domestic Surveillance Operations*, 74 J. AIR L. & COM. 627, 642 (2009).

91. *Ciraolo*, 476 U.S. at 209.

92. *Id.*

93. *Id.*

94. *Id.*

95. *Id.*

96. *Id.* at 211–12 (quoting *Rawlings v. Kentucky*, 448 U.S. 98, 105 (1980)).

97. *Id.* at 212 (quoting *Oliver v. United States*, 466 U.S. 170, 181–83 (1984)).

98. *Id.* at 213.

activities” does not protect against an officer’s lawful “observations from a public vantage point . . . [that] render[] the activities clearly visible.”⁹⁹ Burger then examined the lawfulness of the vantage point, noting that the police made the observation within “publicly navigable airspace,” in a “physically nonintrusive manner,” and that the marijuana plants were “readily discernible to the naked eye.”¹⁰⁰ Based on these factors, Burger determined that no Fourth Amendment search occurred.¹⁰¹ Burger’s third caveat—the naked eye—would at first appear to be a bright-line for aerial surveillance decisions; however, its companion case, *Dow*, immediately added shades of grey.

2. *Constitutionally Protected Zones and Technology Beyond the Naked Eye—
Dow Chemical Co. v. United States*

In the 1986 case of *Dow Chemical Co. v. United States*, the Supreme Court evaluated whether aerial surveillance of an industrial manufacturing complex conducted with an aerial mapping camera was a Fourth Amendment search requiring a warrant.¹⁰² The Environmental Protection Agency (“EPA”) sought an inspection of a 2000-acre Dow Chemical Company manufacturing and industrial facility, but was denied access.¹⁰³ The facility’s perimeter fencing and elaborate security effectively blocked the facility from ground-level view.¹⁰⁴ Although numerous buildings in the facility were covered, some manufacturing equipment and various piping conduits were visible from an aerial vantage point. Consequently, the EPA hired a commercial aerial photographer, using a “standard floor-mounted, precision aerial mapping camera,” to photograph the facility at altitudes of 1200, 3000, and 12,000 feet (always within publicly navigable airspace).¹⁰⁵

On the same day as the *Ciraolo* decision, Chief Justice Burger also delivered the *Dow* decision, which tackled two issues not found in *Ciraolo*: first, whether the common-law “curtilage doctrine” applied to an industrial manufacturing facility, and second, whether the enhanced photography (capable of discerning piping as little as one half of an inch wide) constituted a Fourth Amendment search.¹⁰⁶ On the first issue, the Court noted that the

99. *Id.*

100. *Id.* at 213–14 (defining publicly navigable airspace, the court observed that “[a]ny member of the public flying in this airspace who glanced down could have seen everything that these officers observed”).

101. *Id.*

102. *Dow Chem. Co. v. United States*, 476 U.S. 227 (1986).

103. *Id.* at 229.

104. *Id.*

105. *Id.*

106. *Id.* at 235.

“curtilage area immediately surrounding a private house has long been given protection as a place where the occupants have a reasonable and legitimate expectation of privacy that society is prepared to accept.”¹⁰⁷ The Court further defined curtilage as “the area which extends the intimate activity associated with the sanctity of a man’s home and the privacies of life.”¹⁰⁸ After contrasting curtilage with the lesser protections afforded an “open field,”¹⁰⁹ the Court determined that Dow’s “industrial curtilage” was more analogous to an “open field” because “[t]he intimate activities associated with family privacy and the home and its curtilage simply do not reach the outdoor areas or spaces between structures and buildings of a manufacturing plant.”¹¹⁰ As an “open field,” the Court held that Dow did not have an objectively reasonable expectation of privacy (the second part of the *Katz* test) because the facility was “open to the view and observation of persons in aircraft lawfully in the public airspace immediately above or sufficiently near the area for the reach of cameras.”¹¹¹

Having already found Dow did not have an objective expectation of privacy, the Court only briefly considered the second issue of the enhanced photography. Despite the district court’s finding that the aerial photographer used a \$22,000 camera described as “the finest precision aerial camera available” mounted in a specialty airplane,¹¹² the Supreme Court dismissed the camera as a “conventional, albeit, precise commercial camera commonly used in mapmaking”¹¹³ that could be “readily duplicate[d] by “any person with an airplane and an aerial camera.”¹¹⁴ Consequently, although the photographs “undoubtedly” gave the EPA “more detailed information than naked-eye views,” the enhanced photographs did not constitute a Fourth Amendment search.¹¹⁵ The Court concluded its discussion by discriminating between acceptable enhancements, like the technology used by the EPA, and sophisticated surveillance “not generally available to the public, such as satellite technology,” the use of which may be prohibited by the

107. *Id.*

108. *Id.* at 236 (quoting *Oliver v. United States*, 466 U.S. 170, 180 (1984)) (internal quotation marks omitted).

109. *Id.* at 236 (citing *Oliver*, 466 U.S. at 178).

110. *Id.* at 236.

111. *Id.* at 239.

112. *Dow Chem. Co. v. United States*, 536 F. Supp. 1355, 1357 n.2 (E.D. Mich. 1982), *rev’d*, 749 F.2d 307 (6th Cir. 1984), *aff’d*, 476 U.S. 227 (1986).

113. *Id.* at 238.

114. *Id.* at 231.

115. *Id.* at 238.

Constitution.¹¹⁶ This closing thought—the potential relevance of a surveillance technology’s availability to the public—would prove to be dispositive fifteen years later in *Kyllo v. United States*.¹¹⁷

3. *Lawful Vantage Points and Objectively Reasonable Expectations of Privacy*—Florida v. Riley

In 1989, only three years after *Ciraolo* and *Don*, the Supreme Court again evaluated the constitutionality of aerial surveillance and issued its most recent opinion on the subject.¹¹⁸ In *Florida v. Riley*, the Supreme Court evaluated “[w]hether surveillance of the interior of a partially covered greenhouse in a residential backyard from the vantage point of a helicopter located 400 feet above the greenhouse constitutes a ‘search’ for which a warrant is required under the Fourth Amendment.”¹¹⁹ Similar to the facts in *Ciraolo*, police began their investigation after receiving an anonymous tip that Riley was growing marijuana on his property.¹²⁰ Riley, like the defendant in *Ciraolo*, had concealed his activities from ground level observation.¹²¹ Unlike the defendant in *Ciraolo*, however, Riley also attempted to prevent aerial observation of his activities by growing the marijuana within a greenhouse “covered by corrugated roofing panels, some translucent and some opaque.”¹²² The investigating officer, unable to see inside the greenhouse from ground level, circled twice over the greenhouse in a helicopter at an altitude of 400 feet.¹²³ The officer, with his naked eye, observed that two panels (approximately ten percent) of the greenhouse roof were missing and within that gap he could see marijuana plants growing.¹²⁴

Writing for a plurality of the Court, Justice White found that *Ciraolo*’s fixed-wing aircraft analysis should be applied to the helicopter aerial surveillance of Riley’s property. Noting that Riley met the first *Katz* prong (subjective expectation of privacy) because the greenhouse was within his curtilage and covered, the Court examined whether Riley’s expectation of

116. *Id.* Because there is no further discussion of the type of curtilage being surveilled, “at least to the degree here” appears to relate only to sight-enhancing equipment and not to a distinction between industrial curtilage and *Ciraolo*’s residential curtilage. *See id.*

117. *Kyllo v. United States*, 533 U.S. 27 (2001).

118. McBride, *supra* note 90, at 645.

119. 488 U.S. 445, 447–48 (1989).

120. *Id.* at 448.

121. *Id.*

122. *Id.*

123. *Id.*

124. *Id.*

privacy was objectively reasonable.¹²⁵ The Court determined that Riley had no reasonable expectation of privacy from helicopter surveillance conducted within the navigable airspace of a fixed-wing plane because the two missing roof panels would have enabled the public to observe the greenhouse from the same height.¹²⁶ Because the helicopter surveilled Riley from 400 feet, an altitude below the 500-foot threshold for fixed-wing craft, the Court next examined the lawfulness of flying a helicopter at 400 feet.¹²⁷ Finding that operation of a helicopter at 400 feet is lawful “if the operation is conducted without hazard to persons or property on the surface,”¹²⁸ the Court examined the record and found no “interfere[nce] with respondent’s normal use of the greenhouse” because the helicopter surveillance created no “undue noise, . . . wind, dust, or threat of injury.”¹²⁹ Consequently, this helicopter surveillance did not violate the law, breached no objectively reasonable expectation of privacy, and was not a Fourth Amendment search.¹³⁰

Of particular note is that within its “lawfulness” analysis (here, key to the second prong of the *Katz* test), the plurality’s application of property concepts related to trespass, nuisance, and interference harkens back to *Olmstead*¹³¹ and its rejected physical-trespass doctrine. This was not the Court’s first post-*Katz* “reference to concepts of real or personal property law” in order to determine if a reasonable expectation of privacy exists.¹³² Still, it is notable because in a Fifth Amendment takings case forty-three years prior, the Court characterized the navigable airspace (defined as “airspace above the minimum safe altitudes of flight prescribed by the [FAA]”) above private property as “a public highway.”¹³³ In doing so, the Court abolished the common-law “ancient doctrine that . . . ownership of the land extend[s] to the periphery of the universe” and declared that recognizing “private claims [of] the airspace would . . . clog these highways, seriously interfere with their control and development in the public interest, and

125. *Id.* at 450.

126. *Id.* at 450–51.

127. *Id.*

128. *Id.* at 451 n.3 (citing the controlling FAA regulations found at 14 CFR § 91.79 (1988)).

129. *Id.* at 452.

130. *Id.*

131. *Olmstead v. United States*, 277 U.S. 438, 466 (1928).

132. *Rakas v. Illinois*, 439 U.S. 128, 143–44 & n.12 (1978) (holding that, to be objectively reasonable, an expectation of privacy must have “a source outside of the Fourth Amendment, either by reference to concepts of real or personal property law or to understandings that are recognized and permitted by society.”).

133. *U.S. v. Causby*, 328 U.S. 256, 260–61 (1946) (internal quotations and citations omitted).

transfer into private ownership that to which only the public has a just claim.”¹³⁴ Indeed, noticing the apparent inconsistency in *Riley*’s plurality decision, Justice Brennan—joined in dissent by Justices Marshall and Stevens—explicitly questioned the plurality’s reliance on such concepts: “*Riley* might have a cause of action in inverse condemnation, but that is not what the Fourth Amendment is all about,” and “[i]f indeed the purpose of the restraints imposed by the Fourth Amendment is to ‘safeguard the privacy and security of individuals,’ then it is puzzling why it should be the helicopter’s noise, wind, and dust that provides the measure of whether this constitutional safeguard has been infringed.”¹³⁵

The Court, however, declined to establish the “lawfulness” of a flight (a determination apparently based, in part, on analysis of an aerial surveillance victim’s property rights) as a bright-line rule: “[t]his is not to say that an inspection of the curtilage of a house from an aircraft will always pass muster under the Fourth Amendment simply because the plane is within the navigable airspace specified by law.”¹³⁶ Instead, the Court noted that *Riley* had adduced no empirical evidence “to suggest that helicopters flying at 400 feet are sufficiently rare in this country” to support his claim of an objectively reasonable expectation of privacy.¹³⁷ This additional rationale may have been added to persuade Justice O’Connor to concur because her concurrence heavily criticizes the plurality’s reliance on lawfulness based on compliance with FAA regulations.¹³⁸ Justice O’Connor reasoned that relying on FAA regulations promulgated to “promote air safety” would abdicate Fourth Amendment determinations to the executive branch and that “the fact that a helicopter could conceivably observe the curtilage at virtually any altitude or angle, without violating FAA regulations, does not in itself mean that an individual has no reasonable expectation of privacy from such observation.”¹³⁹ Justice O’Connor then opined that the relevant *Katz* test was “whether the helicopter was in the public airways at an altitude at which members of the public travel with sufficient regularity that *Riley*’s expectation of privacy from aerial observation was not one that society is prepared to recognize as reasonable.”¹⁴⁰ Emphasizing that “[i]f the public

134. *Id.*

135. *Riley*, 488 U.S. at 462 (Brennan, J., dissenting) (quoting Justice White’s majority opinion in *Camara v. Municipal Court*, 387 U.S. 523, 528 (1967)).

136. *Id.* at 451 (majority opinion).

137. *Id.*

138. *Id.* at 452 (O’Connor, J., concurring).

139. *Id.* at 452–54.

140. *Id.* at 454 (internal quotations and citation omitted).

rarely, if ever, travels overhead at such altitudes, the observation cannot be said to be from a vantage point generally used by the public,” but agreeing with the plurality that Riley had not introduced evidence demonstrating such flights were rare, O’Connor concurred that Riley lacked an objective expectation of privacy.¹⁴¹

4. *Constitutionality of Aerial Surveillance after Riley, Dow, and Ciraolo*

In sum, post-*Riley*, *Ciraolo*, and *Dow*, the constitutionality of warrantless aerial surveillance of a home’s curtilage appears to be decided on a case-by-case assessment of the two-pronged *Katz* test. The reasonable expectation of privacy prong, however, appears to depend primarily on two factors: (1) the lawfulness of the flight, and (2) whether the aerial surveillance victim can adduce sufficient evidence that such flights were sufficiently rare. *Riley* and *Ciraolo* demonstrate that the type of craft may not be dispositive unless the craft actually interferes with the victim’s use of her property. *Dow* does not rely on human observation, e.g. the surveillance can be via camera. *Riley* clarifies that this first factor, an extension of earlier lawful vantage point analyses, will be heavily influenced by FAA guidelines (and perhaps other applicable regulatory guidelines), and, potentially, property concepts insofar as the aerial surveillance inhibits the victim’s use of the surveilled property. Also of note is that the regularity of overhead flights, a factor made relevant by *Riley*, appears to be an empirical burden placed on the victim of surveillance, not on the law enforcement agency (potentially creating a presumption that flights in navigable airspace are sufficiently regular). Thus, the Supreme Court’s guidance, as derived from *Riley*, *Dow*, and *Ciraolo*, appears to be that aerial surveillance, whether by naked eye or assisted by some technology, conducted from lawful airspace that is traversed by aircraft with sufficient regularity, and that does not interfere with the victim’s use of her property, is not a Fourth Amendment search and does not require a warrant.¹⁴²

D. MODERN SURVEILLANCE CASES WITH UNMANNED AERIAL SURVEILLANCE IMPLICATIONS

In the twenty-three years since *Riley*, the Court has not commented specifically on the constitutionality of warrantless aerial surveillance despite the many questions left unanswered by *Riley*, *Dow*, and *Ciraolo*. For example,

141. *Id.* at 455.

142. *See id.* (majority opinion); *California v. Ciraolo*, 476 U.S. 207 (1986); *Dow Chem. Co. v. United States*, 476 U.S. 227 (1986).

by speaking only to aerial surveillance of curtilage, *Riley* did not opine on the constitutionality of aerial surveillance of the inside of a home. Additionally, while the aerial surveillance cases appear to allow the use of cameras, they do not explain the extent to which law enforcement agencies may use technology, such as infrared, electro-optical, or night-vision cameras, to enhance their observational powers without a warrant. Clues to the answers to these questions, however, can be found in three recent, notable cases: *Minnesota v. Carter*,¹⁴³ *Kyllo v. United States*,¹⁴⁴ and *United States v. Jones*.¹⁴⁵

1. *Peering into a Constitutionally Protected Zone: The Home*—*Minnesota v. Carter*

As troubling as aerial surveillance of a home's curtilage can be, how much more unsettling would it be if law enforcement used an aerial vantage point to peer inside of the home? The Supreme Court has not directly answered that question, but the Court's 1998 decision in *Minnesota v. Carter* suggests that at least some warrantless surveillance of the inside of a home from an aerial vantage point may be constitutional.¹⁴⁶ In *Carter*, the Court evaluated whether temporary invitees into a residence had a reasonable expectation of privacy and whether a police officer's observation of the interior of a residence through a gap in a "drawn window blind" constituted a Fourth Amendment search.¹⁴⁷ Acting on a tip, a police officer peered into the ground-level window of a garden (basement) apartment from the vantage point of a "grassy area just outside the apartment's window" that was "frequently" used by the public for walking and playing.¹⁴⁸ "[T]hrough a gap in the closed blind," the officer observed Carter bagging a white, powdery substance.¹⁴⁹ Carter exited the apartment and was apprehended.¹⁵⁰ Police then returned to the apartment, executed a search warrant, and discovered that Carter had never been inside that apartment prior to that day and had been invited "for the sole purpose of packaging the cocaine" (an endeavor lasting approximately two and one-half hours).¹⁵¹

143. *Minnesota v. Carter*, 525 U.S. 83 (1998).

144. *Kyllo v. United States*, 533 U.S. 27 (2001).

145. *United States v. Jones*, 132 S.Ct. 945 (2012).

146. *See Carter*, 525 U.S. at 91.

147. *Id.* at 85, 91.

148. *Id.* at 85; *id.* at 103 (Breyer, J., concurring).

149. *Id.* at 85, 86 (majority opinion).

150. *See id.* at 85.

151. *Id.* at 86.

Delivering the opinion of the Court, Chief Justice Rehnquist rejected the Minnesota Supreme Court's use of "standing" doctrine to determine Carter's "legitimate expectation of privacy" and reiterated that the *Katz* test governs this area.¹⁵² Further explaining that "in order to claim the protection of the Fourth Amendment," the Court's previous holding in *Rakas v. Illinois* required Carter to "demonstrate that he personally ha[d] an expectation of privacy in the place searched, and that his expectation [was] reasonable."¹⁵³ The Court next observed that although the "Fourth Amendment protects people, not places," the extent of Fourth Amendment protection "depends . . . upon whether the person who claims the protection of the Amendment has a legitimate expectation of privacy in the invaded place."¹⁵⁴ Deciding that the text of the Fourth Amendment only protects "people in 'their' houses," where "they" includes only residents and overnight guests, the Court held that Carter could not claim a Fourth Amendment violation because he was "merely present with the consent of the householder" to conduct "a business transaction."¹⁵⁵ Because Carter was found to be merely a non-overnight invitee (and the lessee of the apartment was not a party to the case), the Court did not decide whether the officer's observations of the interior of the apartment "constituted a 'search'" and would have violated the reasonable expectation of privacy of a resident or overnight guest.¹⁵⁶ The Court's interpretation of the Fourth Amendment as applicable only to "people in 'their' houses,"¹⁵⁷ however, strongly suggests that the Court would have found that the lessee had a reasonable expectation of privacy under the *Katz* test and therefore a Fourth Amendment search had occurred. Consequently, the Court would have had to determine whether or not the officer's warrantless search (observations through a gap in the closed blinds) was reasonable and hence constitutional.

Although the majority did not evaluate that question, Justice Breyer, in his individual concurrence, characterized the officer's observations as being "made 'from a public area outside the curtilage of the residence'" and concluded that although a Fourth Amendment search occurred, it was not unreasonable.¹⁵⁸ Analogizing to the aerial observations in *Riley* and *Ciraolo*,

152. *Id.* at 87–88 (citing *Katz v. United States*, 389 U.S. 347, 351 (1967)).

153. *Id.* at 88 (citing *Rakas v. Illinois*, 439 U.S. 128, 143–44 & n.12 (1978)).

154. *Id.* (quoting *Katz*, 389 U.S. at 351; *Rakas*, 439 U.S. at 143).

155. *Id.* at 89–91.

156. *Id.* at 86, 91.

157. *See id.* at 89.

158. *Id.* at 103–04 (Breyer, J., concurring). Note, however, that three years later, in *Kyllo v. United States*, Justice Breyer appears to have changed his mind about when a Fourth

Justice Breyer found that despite “[t]he precautions that the apartment’s dwellers took to maintain their privacy” (e.g. closing the blinds of the ground-level apartment), “an ordinary passerby standing in” the same place as the officer (a “place used by the public”) could have “see[n] through the window into the kitchen.”¹⁵⁹ Perhaps signaling his opinion on a future surveillance case, Justice Breyer concluded his concurrence by opining that “there is a benefit to an officer’s decision to confirm an informant’s tip by observing the allegedly illegal activity from a public vantage point,” such as “sav[ing] an innocent apartment dweller from a physically intrusive, though warrant-based, search if the constitutionally permissible observation revealed no illegal activity.”¹⁶⁰

In sum, the Court’s holding and analysis in *Carter* suggests that law enforcement may warrantlessly use aerial surveillance to peer inside of a home if the fruits of the surveillance are used against non-residents and non-overnight guests. While the use of aerial surveillance of the inside of a home against a resident remains unsettled, Justice Breyer, at least, appears to prefer that law enforcement use aerial surveillance to confirm illegality over subjecting an innocent resident to a warrant-based, but intrusive, physical search of the house.¹⁶¹ Even if a future majority of the Court were to disagree with Justice Breyer’s preference, his concurrence reinforces the analogy and reasoning of *Riley* and *Ciraolo*, thereby providing a jurisprudential roadmap suggesting little difference between a lawful vantage point on the ground and one in the air, or between observations of a house’s interior and its curtilage. Consequently, *Carter* offers the possibility that the constitutionality of aerial surveillance of a resident within her house could depend on the frequency and lawfulness of public access to the vantage point.

2. *Limiting Surveillance Technology*—*Kyllo v. United States*

As troubling as aerial surveillance with ordinary cameras can be, how much more unsettling would it be if law enforcement used specialized sensors to record details with telescopic magnification, film in darkness, or “see” through walls? The Supreme Court has not directly addressed the use of such sensors in the aerial surveillance context, but the Court’s 2001 decision in *Kyllo v. United States* suggests there are limits on the power to use technology to warrantlessly enhance a law enforcement agency’s

Amendment search occurs. 533 U.S. 27, 32 (2001) (joining the *Kyllo* majority opinion in characterizing visual observation without trespass as “no ‘search’ at all”).

159. *Id.* at 104.

160. *Id.* at 105–06.

161. *Id.* at 103–06.

observational powers.¹⁶² In *Kyllo*, the Court evaluated whether warrantless law enforcement use of a thermal-imaging device to detect relative amounts of heat within a private home constituted a Fourth Amendment search.¹⁶³ Suspecting that Kyllo was using high-intensity heat lamps to grow marijuana indoors, an agent of the U.S. Department of the Interior used a thermal imager¹⁶⁴ to scan the private home.¹⁶⁵ The scan lasted only a few minutes and was performed at 3:20 a.m. from a parked car on a public road in front of and behind Kyllo's house.¹⁶⁶ The scan revealed that "the roof over the garage and a side wall . . . were relatively hot compared to the rest of the home and substantially warmer than neighboring homes."¹⁶⁷ Using this and other information, the agent successfully sought a search warrant of Kyllo's home, found an indoor marijuana growing operation, and arrested Kyllo.¹⁶⁸

Kyllo unsuccessfully moved to suppress the evidence, entered a conditional guilty plea, and appealed.¹⁶⁹ The Ninth Circuit remanded for an evidentiary hearing to determine "the intrusiveness of [the] thermal imaging."¹⁷⁰ The district court found that the thermal imager was a "non-intrusive device" because it only showed "a crude visual image of the heat being radiated from the outside of the house" and did not "show any people or activity within the walls of the structure, . . . penetrate walls or windows to reveal conversations or human activities," or reveal "any intimate details of the home."¹⁷¹ A divided Ninth Circuit panel affirmed the denial of a motion to suppress, holding that Kyllo had not shown a "subjective expectation of privacy because he had made no attempt to conceal the heat escaping from his home" and that Kyllo had no objectively reasonable expectation of privacy because the imager only exposed "amorphous hot spots" and not "any intimate details of Kyllo's life."¹⁷²

162. *Kyllo v. U.S.*, 533 U.S. 27, 27–28 (2001).

163. *Id.* at 29.

164. "Thermal imagers detect infrared radiation, which virtually all objects emit but which is not visible to the naked eye. The imager converts radiation into images based on relative warmth—black is cool, white is hot, shades of gray connote relative differences; in that respect, it operates somewhat like a video camera showing heat images." *Id.* at 29–30.

165. *Id.* at 29.

166. *Id.* at 29–30.

167. *Id.*

168. *Id.*

169. *Id.* at 30.

170. *Id.*

171. *Id.* (internal quotations and citation omitted).

172. *Id.* at 30–31 (internal quotations and citations omitted).

Writing for a 5–4 majority, Justice Scalia began the Court’s opinion by restating the core of the Fourth Amendment as “the right of a man to retreat into his own home and there be free from unreasonable government intrusion”¹⁷³ and that warrantless searches are presumptively unconstitutional.¹⁷⁴ The Court then admitted, however, that “the antecedent question whether or not a Fourth Amendment ‘search’ has occurred is not so simple under our precedent.”¹⁷⁵ Attempting to explain the governing precedent, the Court (joined by Justice Breyer) specifically cited to Justice Breyer’s concurrence in *Carter* as an example of an incorrect interpretation of precedent (“[o]ne might think that the new validating rationale would be that examining the portion of a house that is in plain public view, while it is a ‘search’ despite the absence of trespass, is not an ‘unreasonable’ one under the Fourth Amendment”) and clarified that such a rationale is mistaken because “in fact we have held that visual observation is no ‘search’ at all.”¹⁷⁶ Next, citing *Ciraolo* and *Riley*, among others, as examples of non-searches, the Court contrasted the instant case as “more than naked-eye” surveillance of a home.¹⁷⁷ The Court then differentiated the enhanced aerial photography in *Dow* from the instant case by noting that in *Dow*, it was “important that [it was] *not* an area immediately adjacent to a private home, where privacy expectations are most heightened.”¹⁷⁸

Recognizing that absent *Dow*, the Court had not previously evaluated “how much technological enhancement of ordinary perception . . . is too much,” the Court acknowledged technological advances had affected the “degree of privacy” protected by the Fourth Amendment: “[f]or example, as [*Riley* and *Ciraolo*] make clear, the technology enabling human flight has exposed to public view (and hence, we have said, to official observation) uncovered portions of the house and its curtilage that once were private.”¹⁷⁹ Before confronting “what limits there are upon th[e] power of technology to shrink the realm of guaranteed privacy,” the Court criticized the *Katz* reasonable expectation test as “circular, . . . subjective[,] unpredictable,” and difficult to apply to certain areas, such as automobiles, the curtilage, and

173. *Id.* at 31 (citing *Silverman v. United States*, 365 U.S. 505, 511 (1961)).

174. *Id.* (citing *Illinois v. Rodriguez*, 497 U.S. 177, 181 (1990); *Payton v. New York*, 445 U.S. 573, 586 (1980)); *see Dow Chem. Co. v. United States*, 476 U.S. 227, 234–35, 239 (1986).

175. *Kyllo*, 533 U.S. at 31.

176. *Id.* at 32.

177. *Id.* at 33.

178. *Id.* at 33 (quoting *Dow*, 476 U.S. at 237 n.4 (emphasis in original)).

179. *Id.* at 33–34 (internal citations omitted).

uncovered portions of a home.¹⁸⁰ In contrast to the difficult *Katz* analysis used for those areas, the Court explained that, at a minimum, a physical intrusion into the interior of the home would violate a reasonable expectation of privacy in the home.¹⁸¹ Consequently, the Court offered a “ready criterion” to identify a search of the interior of a home: “obtaining by sense-enhancing technology any information regarding the interior of the home that could not otherwise have been obtained without physical ‘intrusion into a constitutionally protected area’ constitutes a search—at least where . . . the technology in question is not in general public use.”¹⁸²

During its analysis of potential rules, the Court specifically rejected the Government’s and four-Justice dissent’s proposed rule distinguishing “through-the-wall” from “off-the-wall” surveillance as being a “mechanical interpretation of the Fourth Amendment” rejected in *Katz*.¹⁸³ Claiming that such an approach would conclude, inter alia, that “a satellite capable of scanning from many miles away would pick up only visible light emanating from a house,” the Court reasoned that such a rule “would leave the homeowner at the mercy of advancing technology.”¹⁸⁴ Additionally, the Court rejected the Government’s argument that the thermal imaging search was constitutional because it did not “detect private activities occurring in private areas.”¹⁸⁵ Finding this “intimate details” argument based on *Dow* unpersuasive, the Court claimed “[t]he Fourth Amendment’s protection of the home has never been tied to measurement of the quality or quantity of information obtained.”¹⁸⁶ Instead, the Court believed that adoption of its new, firm, bright-line rule best assured the “preservation of that degree of privacy against government that existed when the Fourth Amendment was adopted.”¹⁸⁷ Utilizing its new rule, the Court held that the thermal imager was not in “general public use,” that it revealed information that would have “been unknowable without physical intrusion,” and therefore that the warrantless surveillance was a presumptively unreasonable Fourth Amendment search.¹⁸⁸

180. *Id.* at 37.

181. *Id.*

182. *Id.* at 34 (quoting *Silverman v. United States*, 365 U.S. 505, 512 (1961)).

183. *Id.* at 35–37; *id.* at 41–44 (Stevens, J., dissenting).

184. *Id.* at 35 (majority opinion).

185. *Id.* at 37.

186. *Id.*

187. *Id.* at 34.

188. *Id.* at 40.

In sum, the Court's holding and analysis suggests several limits to law enforcement use of advanced sensors to enhance warrantless aerial surveillance of the home. Most specifically, infrared cameras and thermal imaging may not be directed at a home, whether from the air or the ground, at least until such devices are in general public use. More generally, the use of any sense enhancing technology, such as radar or ultrasound technologies, which reveals details of the home otherwise unknowable without physical intrusion,¹⁸⁹ is presumptively unconstitutional. However, the use of visible light enhancing sensors against a home (e.g. high-magnification cameras and night-vision optics) is less clear. The Court's emphasis on physical intrusion, combined with dicta claiming visual observation (absent trespass) is no search at all, suggests that aerial surveillance, even using visual enhancing technologies, would be constitutional as long as conducted from a lawful (non-trespassory) vantage point. The Court's analysis, however, characterizes *Ciraolo* and *Riley* as "naked-eye"¹⁹⁰ surveillance of the home—a characterization suggesting that enhanced visual surveillance may be distinguishable from precedent. Additionally, the Court disparages a satellite's visible light scanning technology—essentially an extremely high magnification camera—as being similarly offensive as a thermal imager.¹⁹¹ While aerial and satellite surveillance have many differences, certainly a similarity could be found in aerial use of high-magnification cameras. In any event, *Kyllo*'s most important implication for aerial surveillance is its "not in general public use" caveat. This implicit recognition that society's reasonable expectations of privacy change as technology spreads indicates that increasing public use of UAS will increase the potential constitutionality of warrantless law enforcement use.

3. *Visual Observation Without Trespass is Not a "Search"*—United States v. Jones

Aerial surveillance need not be directed solely at stationary targets, such as homes and their curtilage. A UAS's camera can be a powerful tool for tracking moving targets, but the Supreme Court has not directly addressed whether it is constitutional. The Court's 2012 decision in *United States v. Jones*, however, suggests that law enforcement agencies are free to use UASs to track suspects.¹⁹² In *Jones*, the Supreme Court evaluated whether police

189. *Id.* at 36 (discussing several goals of police scientific research).

190. *Id.* at 33.

191. *Id.* at 35.

192. *See* United States v. Jones, 132 S. Ct. 945 (2012).

attachment of a Global-Positioning System (“GPS”) device to a vehicle, and subsequent monitoring of the vehicle’s movements on public streets, constituted a Fourth Amendment search.¹⁹³ Suspecting Jones of trafficking in narcotics, police, without a valid warrant,¹⁹⁴ attached a GPS device to the undercarriage of a vehicle used by Jones.¹⁹⁵ Police monitored Jones movements via the GPS device for the next twenty-eight days, ultimately indicting Jones.¹⁹⁶ During trial, the district court partially suppressed the GPS data (suppressing only the data from times when the vehicle was in Jones’ garage), but the D.C. Circuit reversed the conviction after holding that warrantless use of the GPS device violated the Fourth Amendment.¹⁹⁷

Delivering the opinion of the Court (a five-justice majority, with the remaining four justices concurring for different reasons), Justice Scalia continued the Court’s resurgent use of property concepts to analyze Fourth Amendment searches.¹⁹⁸ Finding that the text of the Fourth Amendment “reflects its close connection to property,” the Court traced property’s role in search jurisprudence from the eighteenth century through today, but noted that *Katz* and its progeny “ha[d] deviated from that exclusively property-based approach.”¹⁹⁹ Nonplussed by *Katz*, the Court declared that “Fourth Amendment rights do not rise or fall with the *Katz* formulation” and “the *Katz* reasonable-expectation-of-privacy test has been *added to*, not *substituted for*, the common-law trespassory test.”²⁰⁰ Thus, the Court concluded that, as a physical intrusion on private property, the police installation of the GPS device here “would have been considered a ‘search’ within the meaning of the Fourth Amendment when it was adopted” and was therefore unconstitutional absent a warrant.²⁰¹

Evidently believing its use of *Katz* as a supplement to a property-based analysis would “assur[e] preservation of that degree of privacy against government that existed when the Fourth Amendment was adopted,”²⁰² the majority criticized the concurrence’s exclusive reliance on *Katz* analysis,

193. *Id.* at 948–49.

194. Police obtained a warrant authorizing installation of the GPS device in D.C. and within ten days of the warrant’s issuance. Installation occurred, however, in Maryland on the eleventh day. *Id.*

195. *Id.*

196. *Id.*

197. *Id.* at 948–49.

198. *See id.* at 949–53.

199. *Id.* at 949–50.

200. *Id.* at 950, 952.

201. *Id.* at 949.

202. *Id.* at 950 (quoting *Kyllo v. United States*, 533 U.S. 27, 31 (2001)).

despite the concurrence reaching the same result.²⁰³ Specifically, the *Jones* majority explained that while its property-based rule governed trespass situations, situations “without trespass would *remain* subject to *Katz* analysis.”²⁰⁴ This clarification of the extent of the Court’s retrenchment to a property-based analysis specifically affects visual, and therefore aerial, surveillance. In the context of non-trespassory situations, the Court reiterated that, to date, the Court had not “deviated from the understanding that mere visual observation does not constitute a search.”²⁰⁵ The Court continued to explain that because “[a] person traveling in an automobile on public thoroughfares has no reasonable expectation of privacy in his movements from one place to another,”²⁰⁶ “traditional surveillance” of that person, which could include “aerial assistance,” is a constitutional visual observation, not a Fourth Amendment search.²⁰⁷

In sum, the Court’s holding and analysis in *Jones* provides that law enforcement agencies can use aerial surveillance to track a suspect’s public movements. Perhaps more importantly, however, the dicta reaffirms that warrantless visual surveillance (including aerial surveillance), absent trespass, is not a Fourth Amendment search. Although the *Jones* court does not speculate on what form an aerial surveillance trespass may take, aerial surveillance conducted from a lawful vantage point, if consistent with *Riley* and *Ciraolo* (e.g. sufficiently routine and within FAA guidelines), almost certainly remains constitutional.

E. FAA REGULATIONS GOVERNING UAS

Any future evaluation of the constitutionality of UAS surveillance, just like any other visual surveillance, will almost surely require determining the lawfulness of the vantage point. Given *Riley* and *Ciraolo*’s references to FAA guidelines in making this determination,²⁰⁸ current and future FAA UAS guidelines are highly likely to play a vital, and perhaps dispositive, role in any future ruling. The FAA requires special permits for UAS operations in the national airspace system²⁰⁹ because UASs are not compliant with

203. *Id.* at 953–54; *id.* at 957–64 (Alito, J., concurring).

204. *Id.* at 953 (majority opinion) (emphasis in original).

205. *Id.* (citing *Kyllo*, 533 U.S. at 31–32).

206. *Id.* (citing *United States v. Knotts*, 460 U.S. 276, 281 (1983)).

207. *Id.* at 953–54.

208. *See* *Florida v. Riley*, 488 U.S. 445, 449–51 (1989); *California v. Ciraolo*, 476 U.S. 207, 209 (1986).

209. *See* FAA, INTERIM OPERATIONAL APPROVAL GUIDANCE 08-01, UNMANNED AIRCRAFT SYSTEMS OPERATIONS IN THE U.S. NATIONAL AIRSPACE SYSTEM 2 (Mar. 13, 2008).

fundamental safety requirements, such as an onboard pilot to see and avoid other aircraft.²¹⁰ These permit applications make no mention of privacy concerns, instead requesting only that the applicant “demonstrate that injury to persons or property along the flight path is extremely improbable.”²¹¹

Despite dozens of law enforcement agencies successfully filing for UAS permits,²¹² the pace of UAS integration into the national airspace has apparently been too slow for Congress, which passed the FAA Modernization Act (“FAAMA”) of 2012.²¹³ Signed by President Obama in February 2012, the FAAMA requires, among other things, the FAA to increase the pace of integration of drone flights in U.S. airspace.²¹⁴ In response to law enforcement agencies “mistakenly” operating their small UASs under FAA advisory circular 91-57, *Model Aircraft Operating Standards*,²¹⁵ the order also created a “Small [UAS] Aviation Rulemaking Committee” and tasked it with creating and promulgating relevant regulations.²¹⁶ The FAA has not yet completed this task, but the FAAMA requires the FAA “to publish a final rule governing small UAS[s] in the *Federal Register* by August 2014.”²¹⁷

Of note is that the FAAMA focuses on the “safe and routine operation of civil [UASs] in the national airspace system.”²¹⁸ The FAAMA’s sole mention of “privacy” occurs in the context of air passenger screening,²¹⁹ not civil UAS operations. Indeed, the Government Accountability Office (“GAO”), Congress’ research arm, in its report on the FAAMA, discusses potential privacy implications and claims that “FAA officials and others have suggested that regulating privacy issues in connection with equipment carried on UAS, such as surveillance sensors that do not affect safety, is outside FAA’s mission, which is primarily focused on aviation safety.”²²⁰ Consequently, the FAAMA and any resulting future FAA regulations for law enforcement UAS operations are unlikely to address privacy or Fourth Amendment implications. Thus, Justice O’Connor’s criticism of the Court’s

210. *See, e.g.*, Right-of-Way Rules: Except Water Operations, 14 CFR 91.113(b) (2013) (containing “see-and-avoid” provision).

211. *Id.* at 8.

212. *See* Lynch, *supra* note 14.

213. FAAMA, *supra* note 7.

214. *See id.* § 332 (codified as 49 U.S.C. § 40101 et seq.).

215. FAA, *supra* note 38.

216. *Id.*

217. GAO 2012 UAS REPORT, *supra* note 8, at 28.

218. FAAMA, *supra* note 7, § 332(B).

219. *Id.* § 826.

220. GAO 2012 UAS REPORT, *supra* note 8, at 36.

use of FAA regulations in *Riley*²²¹ remains relevant to evaluations of UAS operations twenty-three years later.

F. OTHER LEGISLATION GOVERNING UAS

In addition to FAA regulations, law enforcement UAS operations may be affected by other federal and state legislation. Unlike FAA regulations, which are primarily focused on safety regulations, legislatures can directly protect citizens' privacy by proscribing certain law enforcement uses of UAS. At the moment, such legislation appears to currently enjoy rather broad bipartisan support at both the state²²² and federal levels.²²³ Indeed, the 2012 Republican Party platform included a plank supporting a restriction on domestic law enforcement UAS surveillance.²²⁴

State legislatures have not been idle. On February 6, 2013, by overwhelming bipartisan votes, both houses of the Virginia legislature approved a two-year moratorium on law enforcement UAS use within the state.²²⁵ Since that time, forty-two states have proposed legislation limiting law enforcement use of UAS for surveillance and eight of those states have enacted such legislation.²²⁶ Florida's enacted bill, for example, is entitled the "Freedom from Unwarranted Surveillance Act" and, as of July 1, 2013, protects citizens from "privacy-invasive technology" by requiring a judicial

221. *Florida v. Riley*, 488 U.S. 445, 452 (O'Connor, J., concurring).

222. See Catherine Crump & Jay Stanley, *Why Americans Are Saying No to Domestic Drones*, SLATE (Feb. 11, 2013), http://www.slate.com/articles/technology/future_tense/2013/02/domestic_surveillance_drone_bans_are_sweeping_the_nation.html (describing how "states and cities are increasingly passing legislation to stop the use of surveillance drones").

223. See Sandra Fulton, *Even Amidst a Host of Congressional Priorities, Drones Makes the Cut*, AMERICAN CIVIL LIBERTIES UNION (Mar. 20, 2013), <https://www.aclu.org/blog/technology-and-liberty-criminal-law-reform/even-amidst-host-congressional-priorities-drones> (describing a "rare show of bipartisanship" where members of Congress from both sides of the aisle have raised privacy concerns over drone use).

224. GOP, 2012 Republic Platform, *available at* http://www.gop.com/2012-republican-platform_We/#Item11 (last visited Feb. 28, 2013) ("The Fourth Amendment: Liberty and Privacy: Affirming 'the right of the people to be secure in their houses, papers, and effects, against unreasonable searches and seizures,' we support pending legislation to prevent unwarranted or unreasonable governmental intrusion through the use of aerial surveillance or flyovers on U.S. soil, with the exception of patrolling our national borders. All security measures and police actions should be viewed through the lens of the Fourth Amendment; for if we trade liberty for security, we shall have neither.").

225. ACLU, *Virginia House of Delegates and Senate Approve Two Year Moratorium on Drones*, ACLU.ORG (Feb. 6, 2013), <http://www.aclu.org/criminal-law-reform/virginia-house-delegates-and-senate-approve-two-year-moratorium-drones>.

226. ACLU, *Status of Domestic Drone Legislation in the States*, ACLU.ORG, <https://www.aclu.org/blog/technology-and-liberty/status-domestic-drone-legislation-states> (last updated Aug. 28, 2013).

warrant supported by probable cause before law enforcement may use UAS for surveillance.²²⁷ Not every state's legislature, however, has proposed or enacted protections as broad as those of Florida: Idaho's enacted bill, for example, includes a warrant exception for "controlled substance investigations."²²⁸ Although a patchwork of state laws could protect many Americans from warrantless UAS surveillance, only federal legislation can provide a consistent floor of privacy protection to all Americans.

Towards that goal, in 2012, both Democrat and Republican congresspeople proposed various bills restricting law enforcement use of UAS for surveillance.²²⁹ More recently, on February 13, 2013, Representative Ted Poe introduced a House bill, the "Preserving American Privacy Act of 2013," which purports to generally require a judicial warrant for law enforcement UAS surveillance.²³⁰

Despite the proclaimed privacy-protection intent of such legislation, the exact effects of proposed legislation remain unclear. For example, Representative Poe's bill would allow law enforcement to use UASs to gather "covered information" for use as evidence only if pursuant to either a judicial warrant, presumably supported by probable cause, or a judicial "order," based merely on "specific and articulable facts showing a reasonable suspicion of criminal activity and a reasonable probability that the operation of a [UAS] will provide evidence of such criminal activity."²³¹ Law enforcement would also have the ability to seek a renewable judicial order authorizing UAS surveillance over a "stipulated public area" (such as a public park) for up to forty-eight hours, but the bill does not provide any standard by which the judicial officer is to base this order upon.²³² Perhaps most notably, the bill defines "covered information" as "(A) information that is reasonably likely to enable identification of an individual; or (B) information

227. 2013 Fla. Laws 2013-0092 c1, *available at* <http://flsenate.gov/Session/Bill/2013/0092/BillText/er/HTML>.

228. 2013 Idaho Sess. Laws SB 1134 Engrossment 2, § 21-213, 2(a), 27-28, *available at* <http://www.legislature.idaho.gov/legislation/2013/S1134E2.pdf>.

229. Andrea Stone, *Drone Privacy Bill Would Put In Safeguards On Surveillance*, HUFFINGTON POST (Aug. 1, 2012), http://www.huffingtonpost.com/2012/08/01/drone-privacy-bill_n_1728109.html.

230. Preserving American Privacy Act of 2013, H.R. 637, 113th Cong. (2013). As of Sept. 11, 2013, H.R. 637 has spent nearly seven months languishing in the congressional committee to which it was assigned. GOVTRACK.US, <http://www.govtrack.us/congress/bills/113/hr637>.

231. H.R. 637 § 3119c.

232. *Id.*

about an individual's property that is not in *plain view*.”²³³ “Plain view,” however, is already the line separating constitutional and unconstitutional warrantless surveillance.²³⁴

Regardless of their actual effects, the “other legislation” described above attempts to protect privacy by directly proscribing certain law enforcement activities. FAA regulations, by contrast, indirectly affect privacy through constitutional implications because they define the lawfulness of the vantage point.²³⁵ This “other legislation,” then, operates not as a guide to the potential constitutionality of warrantless UAS surveillance, but rather as an independent and alternative method of protecting privacy should constitutional arguments fail.

IV. LAW ENFORCEMENT UAS SURVEILLANCE WOULD LIKELY BE FOUND CONSTITUTIONAL IN A NUMBER OF SITUATIONS

Those concerned that increasing law enforcement UAS operations erode personal privacy at the expense of the Fourth Amendment do, indeed, have much to worry about. Current Supreme Court jurisprudence, although not directly addressing the Fourth Amendment implications of UAS surveillance, suggests that law enforcement UAS use, with certain limits, would be found constitutional if challenged under the Fourth Amendment. Because warrantless Fourth Amendment searches are presumptively invalid, the challenger will likely only need to convince the Court that a search occurred; that, however, is no easy feat. For a search to occur, *Katz* requires that the person had both a subjective and an objectively reasonable expectation of privacy. *Kyllo* and *Jones* both explain that a trespassory search or one that would have required intrusion but for the use of advanced technology necessarily satisfy the *Katz* test. *Jones* and *Kyllo*, however, have strongly reaffirmed the concept that visual surveillance from a lawful vantage point is not a search at all because the object of surveillance was in “plain view.” Citing to *Ciraolo*, *Dow*, and *Riley*, both *Kyllo* and *Jones* made no distinction between traditional aerial surveillance and on-the-ground surveillance. The rule appears clear: as long as the vantage point is lawful, visual surveillance is not a search. Thus, those wishing for warrantless UAS surveillance to be declared an unconstitutional Fourth Amendment search must indirectly

233. *Id.* § 3119a (emphasis added).

234. *See supra* Sections III.B–D (discussing Fourth Amendment Privacy jurisprudence).

235. *See supra* Section III.E (discussing FAA Regulations).

attack the surveillance with one of three main litigation strategies: (1) establishing that the victim was in a constitutionally protected zone, (2) attacking the legality of the vantage point from which the UAS surveilled, or (3) attacking the specific UAS technology used.

A. ESTABLISHING A CONSTITUTIONALLY PROTECTED ZONE

While the Fourth Amendment protects people and not places,²³⁶ the place where people are when visually surveilled unmistakably matters. *Jones* makes clear that in public, a person has no reasonable expectation of privacy from visual surveillance.²³⁷ The Supreme Court has long held that “an expectation of privacy in commercial premises . . . is different from, and indeed less than, a similar expectation in an individual’s home,”²³⁸ so seeking refuge in a commercial premise affords little, if any, protection from visual surveillance. *Carter*, meanwhile, explains that a person has no reasonable expectation of privacy in *another person’s* home unless invited as an overnight guest.²³⁹ This leaves only a person’s *own* home, but privacy there, too, is not absolute. *Riley* and *Ciraolo*, as reiterated in *Kyllo*, make clear that flight technology has “uncovered portions of the house and its curtilage that once were private.”²⁴⁰

It is unlikely that the Court would find that there is a reasonable expectation of privacy for any activity in the home that can be observed from a public (e.g. non-trespassory and lawful) vantage point. Justice Brennan, in his dissent in *Riley*, even noted that there was nothing in the Court’s opinion to suggest that law enforcement would conduct a Fourth Amendment search if they looked, from their helicopter, through an open window into a room viewable only from the air.²⁴¹ This view is supported by the Court’s emphasis in *Kyllo* that trespass is the basis for evaluating surveillance of the home and reiteration that visual surveillance is not a search.²⁴² Moreover, *Riley*, *Ciraolo*, and Justice Breyer’s concurrence in *Carter* each found anti-observation countermeasures (respectively: building two fences, partially covering the roof of a greenhouse, and incompletely closing window blinds) insufficient to render law enforcement observation a Fourth Amendment search because

236. *Katz v. United States*, 389 U.S. 347, 351 (1967).

237. *See supra* Section III.D.3 (discussing *United States v. Jones*).

238. *New York v. Burger*, 482 U.S. 691, 700 (1987).

239. *See supra* Section III.D.1 (discussing *Minnesota v. Carter*).

240. *Kyllo v. United States*, 533 U.S. 27, 33–34 (2001).

241. *Florida v. Riley*, 488 U.S. 445, 462 (1989) (Brennan, J., dissenting).

242. *Kyllo*, 533 U.S. at 32.

the *Katz* test evaluates a person's subjective expectation of privacy differently than society's objective reasonable expectation.

The precedent in this area may not control because the Court could find some conceptual difference between manned aerial visual observations and UAS visual observations, even if made with a standard camera. The Court in *Riley* cautioned that it was *not* saying “that an inspection of the curtilage of a house from an aircraft will always pass muster under the Fourth Amendment simply because the plane is within the navigable airspace specified by law.”²⁴³ It may be that the Court would determine that a search occurs if a UAS observes the interior of a home through a closed, but not completely opaque, skylight, even if it is surveilling from a lawful vantage point. UAS observation through an above-ground-floor window at an angle impossible from a manned aircraft may offend the Court's interpretation of the Fourth Amendment. As Justice Alito succinctly stated in his concurrence in *Jones*, “technology can change [privacy] expectations.”²⁴⁴ While technology has tended to erode reasonable expectations of privacy, and the existing case law suggests that visual observations from lawful vantage points are not searches, *Kyllo* made clear that some technology can sufficiently offend a reasonable expectation of privacy.

B. ATTACKING THE LAWFULNESS OF A UAS SURVEILLANCE VANTAGE POINT

Riley and *Ciraolo* establish the lawfulness of a vantage point as critical to whether or not a Fourth Amendment search occurred. *Kyllo* and *Jones*'s return of property concepts to the equation further confirmed that visual surveillance must not be trespassory. A UAS surveilling from the same vantage point as *Ciraolo*'s fixed-wing craft or *Riley*'s helicopter would likely be considered to be similarly lawful. However, it is easy to imagine (and perhaps expect) that law enforcement agencies will deploy UAS to surveil from vantage points impossible in conventional aircraft simply because UASs can provide the capability to do so.

In his dissent in *Riley*, Justice Brennan could have been describing current UAS technology and FAA regulations when he asked the reader to imagine “a helicopter capable of hovering just above an enclosed courtyard or patio without generating any noise, wind, or dust at all—and, for good measure, without posing any threat of injury.”²⁴⁵ Law enforcement use under then-

243. *Id.* at 451 (majority opinion).

244. *United States v. Jones*, 132 S. Ct. 945, 962 (2012) (Alito, J., concurring).

245. *Riley*, 488 U.S. at 462–63 (Brennan, J., dissenting).

controlling FAA regulations meant that the vantage point was lawful and therefore observations from that vantage point, even into the house, were not a Fourth Amendment search.²⁴⁶ Current FAA regulations, which still emphasize safety over privacy, are not materially different from those in *Riley*. Even assuming the presence of the UAS did not interfere with the use of the home (an important factor in *Riley* and the FAA regulations), under *Riley*, it would appear that this type of law enforcement UAS surveillance remains constitutional.

In contrast, *Kyllo* and *Jones*'s emphasis on a property-based approach suggests that the Court might entertain the argument that the physical presence of the UAS over the property at sufficiently low heights renders it a trespass, and, therefore, a Fourth Amendment search. *United States v. Causby* may have abolished the common-law "ancient doctrine . . . that ownership of the land extend[s] to the periphery of the universe,"²⁴⁷ but the Court could find that a resident retains some right of exclusion from the airspace above her property that is not usable by conventional craft. It is difficult to imagine that the airspace between a house's curtilage and the height of its roof is a "public highway" such that granting the property owner some right of exclusion "seriously interfere[s] with [its] control and development in the public interest."²⁴⁸

It is also possible that UAS surveillance from a non-trespassory, lawful vantage point could be found to be sufficiently intrusive. Imagine that law enforcement officers, like those in *Carter*, wish to peer inside of an apartment several stories above ground to confirm a tip that criminal activity was occurring. Unable to walk up to the window and peer in, the officers warrantlessly launch a small UAS from the street below. The UAS quickly ascends to the height of the apartment's window and relays video of the activities within to the officers on the ground. Assuming the UAS flight was within FAA guidelines and that no trespass or physical intrusion into the apartment occurred, the vantage point was clearly lawful and appears constitutional under existing precedent. Once FAA regulations open the skies to low-altitude UAS flight, such a holding effectively creates an Orwellian state: using UAS, law enforcement could surveil from the position of any possible viewer at any possible vantage point.

246. *Id.*

247. *See* *United States v. Causby*, 328 U.S. 256, 260 (1946) (internal quotations and citations omitted).

248. *Id.* at 261.

If the Court wishes to avoid such Orwellian effects, it may be persuaded by a *Kyllo*-based argument. More specifically, because the activity within the apartment could only have been seen via the angle of the UAS or through an actual physical law enforcement intrusion into the apartment, the Court could use *Kyllo*'s rule to interpret that a Fourth Amendment search occurred as long as the Court first finds that UASs are not within "general public use."²⁴⁹ However, if such an angle of observation could have been achieved from an adjacent building, regardless of police law enforcement agent's actual ability to physically observe from that location, it is unlikely that *Kyllo* would be found applicable because the general public could have been afforded the same view.

Alternatively, the Court may choose to differentiate the hypothetical above from *Riley* and *Ciraolo* because a traditional aircraft would have been incapable of observing from the angle the UAS observed from. This potential differentiation underscores Justice O'Connor's criticism of judicial reliance on FAA regulations for a determination of the lawfulness of a vantage point. A future Court could find grounds to declare that the lawfulness of a vantage point is not determined merely by compliance with FAA regulations because the FAA is primarily concerned with safety and not privacy or Fourth Amendment protections, as highlighted by its recent mandate from Congress in the FAAMA.²⁵⁰ In such a case, law enforcement attempting to introduce evidence so obtained may need to heed Justice O'Connor's suggestion and demonstrate that UAS flights at that altitude are routine enough to prevent an objectively reasonable expectation of privacy. Unfortunately this argument for the unconstitutionality of certain UAS surveillance may expire soon: the FAAMA's stated goal is to rapidly increase the routine private and governmental use of UAS in the United States.²⁵¹

C. ATTACKING THE SPECIFIC UAS TECHNOLOGY USED

The third type of potential attack on the constitutionality of UAS visual surveillance is predicated on *Kyllo*'s "general public use" criteria for advanced surveillance technologies. A challenger of law enforcement UAS surveillance could attempt to assert that because the "general public" does not use UASs either specifically for surveillance or generally for any use, law enforcement's use of UASs should be held unconstitutional. Because the Court carefully crafted the *Kyllo* rule to establish a bright line at surveillance of the home, this

249. *Kyllo v. United States*, 533 U.S. 27, 34 (2001).

250. FAAMA, *supra* note 7, § 332(B).

251. FAAMA, *supra* note 7.

argument is unlikely to be persuasive against UAS surveillance outside the home. Even when applied to UAS surveillance of the home, however, the window of opportunity to challenge UAS surveillance is closing rapidly. Even if a challenger to law enforcement UAS surveillance could adduce sufficient evidence demonstrating the general public does not use UASs right now, private use of UASs is expected to grow.²⁵² Moreover, Congress, via the FAAMA, has declared its goal to increase private UAS operations until they are routine.²⁵³

If a general challenge to law enforcement UAS surveillance is destined to fail, perhaps opponents could successfully challenge law enforcement use of specific optics. *Kyllo* has already specifically held that infrared cameras (i.e., thermal imaging) are not sufficiently used by the public. This determination is of course subject to change as the technology proliferates to the public. For now, at least, law enforcement cannot warrantlessly use infrared cameras mounted on a UAS for surveillance purposes. Indeed, any future sensor capable of intruding into the home and not in general public use (perhaps radar and sonar based technologies), would be found unconstitutional under *Kyllo* regardless of whether it was mounted on a UAS or deployed on the ground.

The use of advanced electro-optical cameras allowing many thousands times magnification²⁵⁴ may also be foreclosed by a lack of general public use. Indeed, *Kyllo*'s dicta mentions satellite scanning technologies based upon advanced electro-optical cameras, but is unclear on what their import is. Perhaps it is a hint that the Court would entertain an argument on the constitutionality of similar cameras mounted on UASs? If so, the Court could also use the naked eye of *Ciraolo* and *Riley* and the "common" aerial camera in *Dow* (as well as its specific fact of industrial, not residential, curtilage) as points of differentiation. In any case, if law enforcement agencies take care to only equip their UAS with cameras featuring abilities readily available to the public, then warrantless law enforcement UAS surveillance is very unlikely to run afoul of *Kyllo* and will remain constitutional.

252. GAO 2012 UAS REPORT, *supra* note 8, at 5.

253. FAAMA, *supra* note 7.

254. For example, DARPA has recently announced development of a 1.8 gigapixel camera "that is supposedly the highest-resolution surveillance system in the world." Nicole Lee, *DARPA's 1.8-gigapixel cam touts surveillance from 20,000 feet* (video), ENGADGET.COM (Jan. 28, 2013), <http://www.engadget.com/2013/01/28/darpa-argus-is-surveillance>. The electro-optical camera is described as being able to "spot a six-inch object within a ten square mile radius from 20,000 feet in the air." *Id.*

V. CONCLUSION

Unmanned aircraft systems, once exclusively the province of the military, are rapidly spreading to civilian use. Federal, state, and local law enforcement agencies have discovered that UASs are a relatively inexpensive and highly effective augmentation of their airborne enforcement arsenals. Consequently, many law enforcement agencies are taking advantage of UAS diversity and configurability to expand their aerial surveillance efforts. These efforts, however, raise many Fourth Amendment implications for the privacy of those surveilled. Many people would like the Supreme Court to find UAS surveillance unconstitutional, but current Fourth Amendment conventional aerial-surveillance jurisprudence appears likely to extend to UAS surveillance operations. If so, then the Fourth Amendment may offer little privacy protection because most surveillance applications do not actually qualify as Fourth Amendment searches in the first place. Regardless, dicta in current precedent raise the possibility that the Court will not turn a deaf ear towards all constitutional challenges of law enforcement UAS surveillance. Specifically, the Court may be persuaded by arguments based on the heightened expectations of privacy in constitutionally-protected zones, the vantage point from which a UAS surveilled, or the specific technology used. In case the Supreme Court is not so persuaded, those worried about losing privacy to warrantless law enforcement UAS surveillance should continue to seek legislation proscribing such conduct. Such legislation may not affect the constitutionality of warrantless law enforcement UAS surveillance, but it can certainly protect Americans' privacy. As the deployment and operation of UASs accelerates, so too should the debate over the accompanying privacy implications.